

I claim as my invention:

1. A composition for enteral administration comprising pyruvate and an anabolic protein composition, said anabolic protein composition comprises 2.7 to 5.5 gms of arginine, 2.0 to 3.9 gms of histidine, 7.0 to 10.1 gms of lysine, 1.9 to 4.5 gms of tyrosine, 1.0 to 2.7 gms of tryptophan, 5.0 to 8.0 gms of phenylalanine, 2.0 to 4.8 gms of cystine, 1.8 to 2.5 gms of methionine, 5.0 to 8.5 gms of serine, 5.0 to 8.3 gms of threonine, 9.0 to 11.0 gms of leucine, 3.2 to 5.0 gms of isoleucine, 6.0 to 8.0 gms of valine, 12.0 to 17.0 gms of glutamic acid, 5.0 to 9.5 gms of aspartic acid, 2.2 to 4.5 gms of glycine, 5.0 to 7.1 gms of alanine and 6.0 to 15 gms of proline per 100 gms of protein.
2. The composition according to claim 1 wherein the weight ratio of pyruvate to anabolic protein composition can range from 1:1 to 1:50.
3. The composition according to claim 1 wherein the weight ratio of pyruvate to anabolic protein composition can range from 1:5 to 1:20.
4. The composition according to claim 1 wherein said composition is in the form of a powder, tablet, capsule, pill, liquid, food additive, candy or confection.
5. The composition according to claim 4 wherein said powder is admixed with a liquid prior to enteral administration.
6. A method for increasing the fat loss or decreasing the percent body fat of a mammal said method comprising administering to said mammal a therapeutically effective amount of an anabolic protein composition.
7. The composition according to claim 1 wherein said pyruvate is selected from the group consisting of calcium pyruvate, sodium pyruvate, magnesium pyruvate, potassium pyruvate, pyruvyl-glycine, pyruvyl-creatine,

pyruvamides, pyruvyl-alanine, pyruvyl-glutamine, pyruvyl-leucine, pyruvyl-valine, pyruvyl-isoleucine, pyruvyl-phenylalanine, pyruvyl-proline, pyruvyl-sarcosine, their amides, esters and salts and mixtures thereof.

8. The method according to claim 6 wherein 100 gms of said anabolic protein composition comprises 2.7 to 5.5 gms of arginine, 2.0 to 3.9 gms of histidine, 7.0 to 10.1 gms of lysine, 1.9 to 4.5 gms of tyrosine, 1.0 to 2.7 gms of tryptophan, 5.0 to 8.0 gms of phenylalanine, 2.0 to 4.8 gms of cystine, 1.8 to 2.5 gms of methionine, 5.0 to 8.5 gms of serine, 5.0 to 8.3 gms of threonine, 9.0 to 11.0 gms of leucine, 3.2 to 5.0 gms of isoleucine, 6.0 to 8.0 gms of valine, 12.0 to 17.0 gms of glutamic acid, 5.0 to 9.5 gms of aspartic acid, 2.2 to 4.5 gms of glycine, 5.0 to 7.1 gms of alanine and 6.0 to 15 gms of proline per 100 gms of protein.

An anabolic protein composition comprising:

- a) albumin protein at about 60-65% by weight;
- b) phenylalanine, methionine and valine, each at about 0.3 to 1.5% by weight;
- c) isoleucine and alanine, each at about 0.5 to 1.7% by weight;
- d) methionine and glutamic acid each at about 1.0 to 2.2% by weight; and
- e) proline at about 2.5 to 4.0% by weight.

An anabolic protein composition comprising:

- a) albumin protein at about 15-30% by weight;
- b) whey protein isolate at about 60 to 70% by weight;
- c) arginine at about 0.1-0.25% by weight;
- d) histidine at about 0.05 -0.2% by weight;

- e) methionine, serine and glycine, each at about 0.1-0.5% by weight;
- f) alanine at about 0.6-1.0% by weight; and
- g) proline at about 0.5-2.0% by weight.

11. The method according to claim 6 wherein said anabolic protein composition is in the form of powder, tablet, capsule, pill, liquid, food additive, candy or confection.

12. The method according to claim 11 wherein said powder is admixed with a liquid prior to administration.

13. A method for increasing the protein concentration, lean body mass or muscle mass in a mammal which comprises administering orally to a mammal in need thereof, a therapeutically effective amount of an anabolic protein composition according to claim <sup>2</sup>~~10~~.

14. The method according to claim <sup>3</sup>~~13~~ wherein said composition additionally comprises pyruvate selected from the group consisting of sodium pyruvate, calcium pyruvate, magnesium pyruvate, potassium pyruvate, pyruvyl-creatine, pyruvyl-glycine, pyruvamides, pyruvyl-alanine, pyruvyl-glutamine, pyruvyl-leucine, pyruvyl-valine, pyruvyl-isoleucine, pyruvyl-phenylalanine, pyruvyl-proline, pyruvyl-sarcosine, their amides, esters and salts and mixtures thereof.

The method according to claim <sup>3</sup>~~13~~ wherein said anabolic protein composition comprises glutamic acid at about 12 to 17 weight %; lysine and leucine each at about 7 to 11 weight %; valine, aspartic acid, alanine, threonine, serine, proline and phenylalanine each at about 5 to 10 weight %; arginine, isoleucine and glycine each at about 2 to 6 weight %; and tyrosine, histidine, tryptophan, cystine and methionine each at about 0.5 to 5 weight %.

16. A method for inducing a fat loss in a mammal, said method comprising administering to said mammal an anabolic protein composition having an amino acid profile characterized by:
- a) glutamic acid at about 12 to 17 weight %;
  - b) lysine and leucine each at about 7 to 11 weight %;
  - c) valine, aspartic acid, alanine, threonine, serine, proline and phenylalanine each at about 5 to 10 weight %;
  - d) arginine, isoleucine and glycine each at about 2 to 6 weight %; and
  - e) tyrosine, histidine, tryptophan, cystine and methionine each at about 0.5 to 5 weight % based on the total amino nitrogen.

An anabolic protein composition comprising:

- a) about 56-60 wt. % whey protein concentrate;
- b) about 9.5-13.5 wt. % albumin protein;
- c) about 0.5-2.5 wt % phenylalanine;
- d) about 1.6-3.6 wt % proline; and
- e) about 0.05-1.5 wt % of each of histidine, methionine, serine, glycine and alanine.

18. A method for the treatment of catabolism in a human caused by AIDS or cancer, said method comprising the administration of the anabolic protein composition according to claim 17.

19. A method for the treatment of catabolism in a human caused by AIDS or cancer, said method comprising the administration of the composition according to claim 18.

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A method for decreasing the percentage body fat in a mammal which comprises administering to said mammal a therapeutically effective amount of an anabolic protein composition according to claim <sup>2</sup>~~10~~.

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A method for ameliorating the effects of physical exertion, said method comprising the administration to a person in need of such amelioration, a composition according to claim <sup>2</sup>~~10~~.

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A method to prepare a protein composition having a desired amino acid profile, said method comprising the steps of: a) setting a target amino acid profile (Target); b) selecting a source of amino nitrogen for said protein compositions; c) obtaining an amino acid profile for said source of amino nitrogen; d) comparing the amino acid profile of said Target with the amino acid profile of said source of amino nitrogen to determine those amino acids in said source of amino nitrogen that exceed the maximum allowable levels in said Target; e) calculate the maximum amount of said source of amino nitrogen that can be used to formulate said protein composition by dividing grams of selected amino acid of said source of amino nitrogen by grams of Target selected amino acid to yield a value  $aK$ , that will be less than 1.0; f) repeat step e) for each amino acid; g) select the lowest  $aK$  from steps e) and f) and designate  $aK1$ ; h) determine the amount of said source of amino nitrogen to be used to prepare 100 gms of said protein composition by multiplying  $aK1$  by 100; i) obtaining free amino acids; and j) adding free amino acids to said source of amino nitrogen to achieve said Target of said protein composition.

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A method for decreasing the percent body fat and increasing the muscle mass of a mammal, said method comprising administering to said mammal a

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